

Fasteners (Screws and Welds)

Screw Table Notes

1. Screw spacing and edge distance shall not be less than $3 \times d$. (d = Nominal screw diameter)
2. The allowable loads are based on the steel properties of the members being connected, per AISI section E4.
3. When connecting materials of different steel thicknesses or tensile strength (F_u), the lowest applicable values should be used.
4. The nominal strength of the screw must be at least 3.75 times the allowable loads.
5. Values include a 3.0 factor of safety.
6. Applied loads may be multiplied by 0.75 for seismic or wind loading, per AISI A 5.1.3.
7. Penetration of screws through joined materials should not be less than 3 exposed threads. Screws should be installed and tightened in accordance with screw manufacturer's recommendations.

Allowable Loads for Screw Connections (lbs/screw)

| Steel Mils | Thickness Design (in) | Steel Properties | | No. 12 Dia. = 0.216 (in) | | No. 10 Dia. = 0.190 (in) | | No. 8 Dia. = 0.164 (in) | | No. 6 Dia. = 0.139 (in) | |
|------------|-----------------------|----------------------|----------------------|-----------------------------|---------|-----------------------------|---------|----------------------------|---------|----------------------------|---------|
| | | F _y (ksi) | F _u (ksi) | Shear | Pullout | Shear | Pullout | Shear | Pullout | Shear | Pullout |
| 18 | 0.0188 | 33 | 45 | | | | | 66 | 39 | 60 | 33 |
| 27 | 0.0283 | 33 | 45 | | | | | 121 | 59 | 111 | 50 |
| 30 | 0.0312 | 33 | 45 | | | 151 | 76 | 141 | 65 | 129 | 55 |
| 33 | 0.0346 | 33 | 45 | | | 177 | 84 | 164 | 72 | 151 | 61 |
| 43 | 0.0451 | 33 | 45 | 280 | 124 | 263 | 109 | 244 | 94 | 224 | 79 |
| 54 | 0.0566 | 33 | 45 | 394 | 156 | 370 | 137 | 344 | 118 | | |
| 68 | 0.0713 | 33 | 45 | 557 | 196 | 523 | 173 | | | | |

Weld Table Notes

1. Weld capacities based on AISI, section E2
2. When connecting materials of different steel thicknesses or tensile strength (F_u), the lowest applicable values should be used.
3. Values include a 2.5 factor of safety.
4. Based on the minimum allowance load for fillet or flare groove welds, longitudinal or transverse loads.
5. Allowable loads based on E60xx electrodes.
6. For material less than or equal to .1242" thick, drawings show nominal weld size. For such material, the effective throat of the weld shall not be less than the thickness of the thinnest connected part.

Allowable Loads for Fillet Welds and Flare Groove Welds

| Steel Mils | Thickness Design (in) | Steel Properties | | Nominal Weld Size | Allowable Load (lb/in) |
|------------|-----------------------|----------------------|----------------------|-------------------|------------------------|
| | | F _y (ksi) | F _u (ksi) | | |
| 43 | 0.0451 | 33 | 45 | 1/16 | 609 |
| 54 | 0.0566 | 33 | 45 | 3/32 | 764 |
| 68 | 0.0713 | 33 | 45 | 1/8 | 963 |
| 97 | 0.1017 | 33 | 45 | 1/8 | 1373 |
| 118 | 0.1242 | 33 | 45 | 1/8 | 1677 |
| 54 | 0.0566 | 50 | 65 | 3/32 | 1104 |
| 68 | 0.0713 | 50 | 65 | 1/8 | 1390 |
| 97 | 0.1017 | 50 | 65 | 1/8 | 1983 |
| 118 | 0.1242 | 50 | 65 | 1/8 | 2422 |